

## WHAT IS CLAIMED IS:

1 *Subc27* 1. A transmitter for transmitting a stream of known symbols  
2 and unknown symbols through a transmission channel to a first  
3 receiver that receives the transmitted stream of known symbols and  
4 unknown symbols distorted by intersymbol interference (ISI) and  
5 reduces therein an ISI signal, wherein the transmitter comprises:  
6 a known symbol distribution controller capable of  
7 inserting a plurality of known symbol clusters into an outgoing  
8 stream of unknown symbols in an optimum distribution in order to  
9 improve the performance of the first receiver.

1 2. The transmitter as set forth in Claim 1 wherein said  
2 known symbol distribution controller is capable of determining a  
3 channel order,  $L$ , associated with the receiver.

1 3. The transmitter as set forth in Claim 2 wherein said  
2 known symbol distribution controller determines the optimum  
3 distribution according to a value of the channel order.

1           4.    The transmitter as set forth in Claim 3 wherein said  
2 known symbol distribution controller determines a minimum size of  
3 each of the plurality of known symbol clusters according to the  
4 value of the channel order.

1           5.    The transmitter as set forth in Claim 1 wherein said  
2 transmitted stream of known symbols and unknown symbols is received  
3 by a plurality of receivers and wherein the known symbol  
4 distribution controller is capable of determining a plurality of  
5 channel orders,  $L_1$  through  $L_n$ , wherein each channel order is  
6 associated with a corresponding one of said plurality of receivers.

1           6.    The transmitter as set forth in Claim 5 wherein said  
2 known symbol distribution controller is capable of determining a  
3 maximum one of the plurality of channel orders.

1           7.    The transmitter as set forth in Claim 6 wherein said  
2 known symbol distribution controller determines the optimum  
3 distribution according to a value of the maximum channel order.

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1        8.    The transmitter as set forth in Claim 7 wherein said the  
2    known symbol distribution controller determines a minimum size of  
3    each of the plurality of known symbol clusters transmitted to all  
4    of the plurality of receivers according to the value of the maximum  
5    channel order.

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6        9. A network comprising:

7                a plurality of receivers, each of said receivers capable  
8        of receiving from a transmission channel an incoming stream of  
9        known symbols and unknown symbols distorted by intersymbol  
10       interference (ISI), wherein each of said receivers comprises a  
11       block decision feedback equalizer capable of receiving the  
12       transmitted stream of known symbols and unknown symbols distorted  
13       by intersymbol interference (ISI) and reducing therein an ISI  
14       signal; and

15               a transmitter for transmitting a stream of known symbols  
16       and unknown symbols through a transmission channel to a first  
17       receiver, wherein the transmitter comprises a known symbol  
18       distribution controller capable of inserting a plurality of known  
19       symbol clusters into an outgoing stream of unknown symbols in an  
20       optimum distribution in order to improve the performance of a first  
21       receiver.

1        10. The network as set forth in Claim 9 wherein said known  
2 symbol distribution controller is capable of determining a channel  
3 order,  $L$ , associated with the first receiver.

1        11. The network as set forth in Claim 10 wherein said known  
2 symbol distribution controller determines the optimum distribution  
3 according to a value of the channel order.

1        12. The network as set forth in Claim 11 wherein said known  
2 symbol distribution controller determines a minimum size of each of  
3 the plurality of known symbol clusters according to the value of  
4 the channel order.

1        13. The network as set forth in Claim 9 wherein said  
2 transmitted stream of known symbols and unknown symbols is received  
3 by the plurality of receivers and wherein the known symbol  
4 distribution controller is capable of determining a plurality of  
5 channel orders,  $L_1$  through  $L_n$ , wherein each channel order is  
6 associated with a corresponding one of said plurality of receivers.

1        14. The network as set forth in Claim 13 wherein said known  
2 symbol distribution controller is capable of determining a maximum  
3 one of the plurality of channel orders.

1        15. The network as set forth in Claim 14 wherein said known  
2 symbol distribution controller determines the optimum distribution  
3 according to a value of the maximum channel order.

1        16. The network as set forth in Claim 15 wherein said the  
2 known symbol distribution controller determines a minimum size of  
3 each of the plurality of known symbol clusters transmitted to all  
4 of the plurality of receivers according to the value of the maximum  
5 channel order.

1        17. For use a network comprising a transmitter and a  
2 plurality of receivers, wherein each receiver receives from a  
3 transmission channel an incoming stream of known symbols and  
4 unknown symbols distorted by intersymbol interference (ISI), and  
5 wherein each receiver comprises a block decision feedback equalizer  
6 capable of receiving the transmitted stream of known symbols and  
7 unknown symbols distorted by intersymbol interference (ISI) and  
8 reducing therein an ISI signal, a method of transmitting the known  
9 symbols and unknown symbols comprising the steps of:

10            inserting a plurality of known symbol clusters into an  
11 outgoing stream of unknown symbols in an optimum distribution  
12 capable of improving the performance of a first one of the  
13 receivers; and

14            transmitting the stream of known symbols and unknown  
15 symbols according to the optimum distribution.

1 18. The method as set forth in Claim 17 further comprising  
2 the steps of:

3 determining a plurality of channel orders,  $L_1$  through  $L_n$ ,  
4 wherein each channel order is associated with a corresponding one  
5 of said plurality of receivers; and

6 determining a maximum one of the plurality of channel  
7 orders.

1 19. The method as set forth in Claim 18 further comprising  
2 the step of determining the optimum distribution according to a  
3 value of the maximum channel order.

1 20. The method as set forth in Claim 19 further comprising  
2 the step of determining a minimum size of each of the plurality of  
3 known symbol clusters transmitted to all of the plurality of  
4 receivers according to the value of the maximum channel order.